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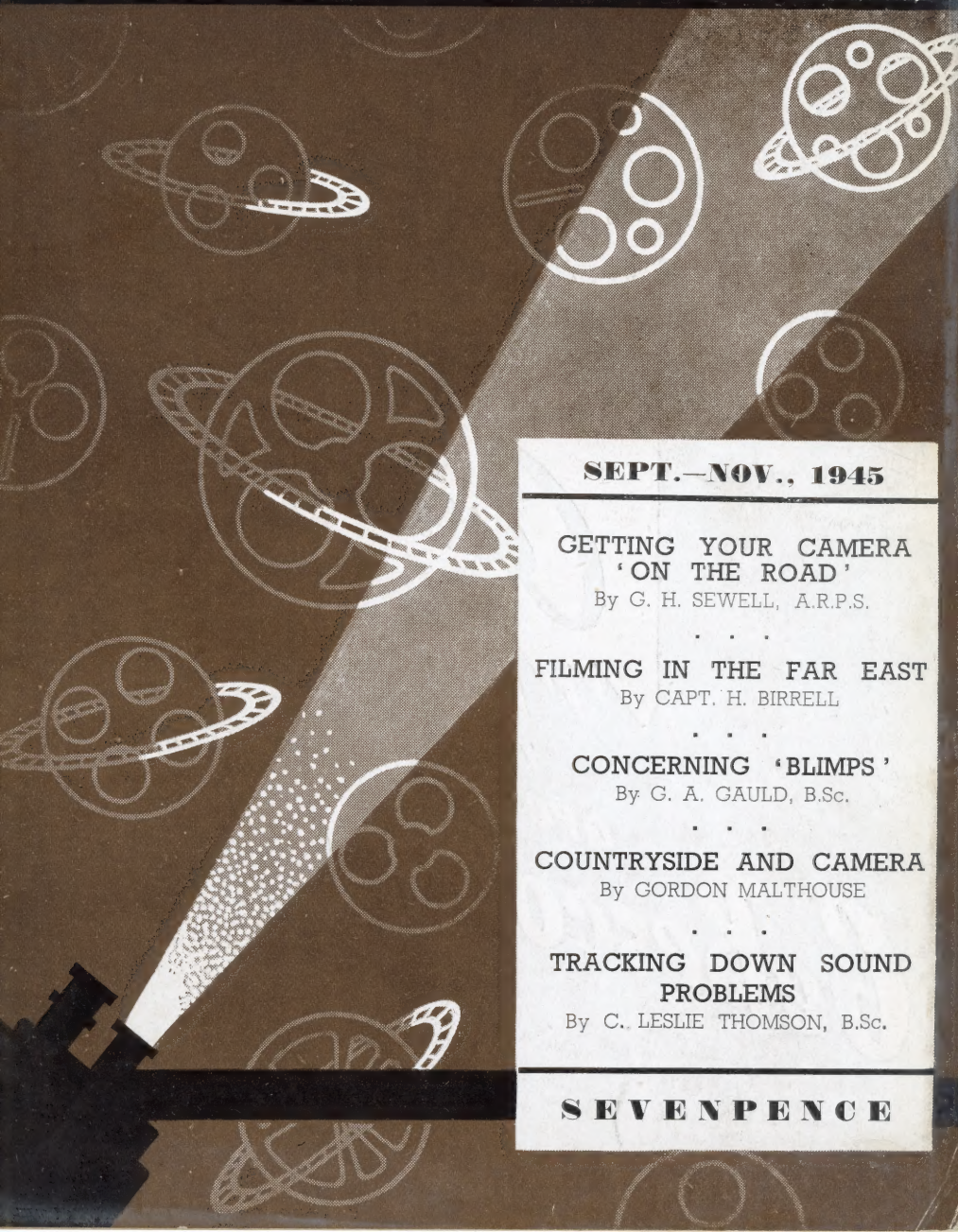

SEPT.—NOV., 1945

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. . .

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. . .

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AMATEUR CINE WORLD

Incorporating "Miniature Camera World"

AUTUMN
SEPT., 1945—NOV., 1945
VOL. II. No. 8
(Old Series, Vol. X, No. 5)

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AMATEUR CINE WORLD is published quarterly from Link House, 24, Store St., London, W.C.1.

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GORDON S. MALTHOUSE, *Editor*

"After Only One Bottle . . . ."

WE have frequently stressed in these columns the need for a more extensive circulation of amateur films, so that they shall be readily available to anyone for home showing. We have been careful to stress, too, that the clientele of the commercial substandard film libraries is composed of two quite distinct types of borrowers: those who are interested only in the entertainment value of the films and do not produce their own, and those who run a projector primarily as an adjunct of their cine camera.

The former are numerically far the stronger, and moreover they are, in the main, regular customers, so that the fare provided is dictated by their presumed wishes and tastes. Those preferences do not, it is to be presumed, extend to amateur films. The amateur, on the other hand, is interested not so much in the purely entertainment value of films made by other amateurs (although, of course, the entertainment must be there) as in the fact that they are examples of film craft produced by people who are subject to all the limitations with which *he* has to contend. As such, even if a study of them does not materially assist him to improve his own output, they will at least act as an incentive.

The best work, however, is not readily susceptible to analysis by the unpractised eye, for the apparent ease with which the effects are obtained is often deceptive. Of more practical value to the tyro would be a series of films which show not only effects but causes—films which are an instructional handbook expressed entirely in terms of pictures.

This is no new suggestion. We have indicated the form they could take in our very popular pictorial feature, "We Show You How It Is Done." But this seems a particularly appropriate time to recapitulate its advantages and to urge its serious consideration with renewed vigour, since many of us are about to take up our hobby again after a break of several years, and we shall have forgotten some of the things we had learnt and shall be joined by newcomers who will have to start from the beginning.

To be of maximum use, these "How It Is Done" films would employ the familiar "before" and "after" technique beloved of patent medicine vendors. The raw material would first be shown, inadequately presented—but not exaggeratedly so—followed by the same material re-arranged or otherwise improved. The films would thus be largely concerned with the technique of editing.

They would show the amateur, with more force and clarity than the printed word could ever achieve, the striking improvements that can be effected by the transposition of some shots, the trimming of others, cutting on action, and so on. But they would also teach valuable lessons in the pre-editing stage.

For example, one sequence might consist of the following. First, a long shot of a landscape containing a number of well-defined features, and held on for a sufficient length of time for them to be carefully noted. Two more long shots of the same scene, but from different viewpoints, could then follow. These would show the view as it presented itself to the beginner looking at it with his own eyes and not the selective eye of the camera. Then would come one or two shots such as the beginner might be expected to take — a rapid pan, perhaps, ending indecisively and going back on itself, and similar common errors. The "after" sequence would point out the correct approach, not in sub-titles but in pictures. It might begin with a pan, but slower and shorter than the first, and finishing on a point of interest. A closer view of the finishing point might well follow, to be succeeded by shots so selected as to form a coherent, smoothly flowing sequence.

A section on the use of filters—still regarded by many amateurs as a desirable though seldom necessary luxury—would also be of considerable value, because, although the effects obtained can be illustrated in still photographs, the half-tone process cannot

(*Continued on page* 263)

Putting Your Camera 'On the Road'

BY GEORGE H. SEWELL, A.R.P.S.

THE return of the basic ration took motorists by surprise, even though there had been much prior speculation as to when it would come back. As a result many cars went on the road in an unserviced condition, and lasted only a short time before faults developed. The results varied from death and injury, as in the case where mice in the upholstery frightened a woman passenger and caused her to clutch the arm of the driver, down to a whole range of minor defects. Then the unfortunate ones were faced with an almost complete famine of replacement parts and of mechanics to do the necessary repairs. In most cases a little forethought would have saved car owners from many weeks or months of deprivation.

One of these days the supply of film will suddenly return. Now is the time to ensure that when that moment arrives our cameras and associated equipment are in good fettle, ready to go into instant trouble-free action.

Ideally, cameras will have been stored in a well-ventilated place, cool in summer, warmed in winter, and will have been looked at and dusted over from time to time. But that ideal will not often have been attained. Owners away in the forces, or called to some other form of all-absorbing national service, will have placed their apparatus in some convenient cupboard or other storage place, often neither ventilated nor warmed. The instrument we bring forth may look a sorry thing at first sight. But *nil desperandum*, a little care and cleaning will soon restore the *status quo ante bellum*.

If the apparatus has been subject to damp this will be readily apparent on and in the leather case. Carefully unpack the camera, and lay out all the various items on sheets of newspaper on a table top. Gently brush out the interior of the case, keeping a sharp look out for signs of moth. If apparent, remove all the eggs and spray gently with "Flit" or other exterminator. (Later on D.D.T. will provide us with almost permanent protection against this pest.) Rub off encrusted dirt and mildew from the exterior, using a slightly damp rag if necessary. Then put the case aside in a dry warm place (not in direct sunshine), and leave for a day or even longer to dry out thoroughly. Later the stitching can be checked over, and if any of the corners or seams have started a few thread stitches in the right place will prevent the trouble from spreading. Any lining which has started to come away should be carefully stuck back with glue or Seccotine or Durofix. Give a final more vigorous brushing to the interior. Then dress the outside of the case very thoroughly with good saddle soap or a first class brand of leather polish, feeding it well into those places where the leather bends to form a hinge. This will replace the natural oils which will have partly been lost by evaporation, and if necessary the dressing can be repeated several times. Give a final thorough polish until all excess and tackiness is removed.

The instinct to run the camera will be strong, but resist it until you have very thoroughly cleaned the interior. A soft brush and a few clean rags are all that are necessary. The exterior can similarly be cleaned and finally rubbed with an oily rag. Any chromium parts which have become dull and encrusted can be cleaned with "Simoniz" cleaner (*not* the polish), or with ultra-fine steel wool applied with a very light touch. The danger with the latter is that it sheds pieces of itself when used. Keep the camera closed, therefore, and stuff any apertures with small pieces of cloth. Blow off the pieces with a bellow or car or cycle pump, or better still with a proper airline. The lenses should have been removed for the above operation, and on no account must abrasives, however mild, be used on the aluminium of lens mounts or on the enamel finish of the camera body. Some cases are leather covered, and the covering should be examined carefully and, if necessary, stuck back into place. The metal and enamelled parts can be given a final rub with a lightly oiled rag; the leather fed with polish as for the case.

The lens and finder glasses should be carefully examined and cleaned with a soft brush and some pieces of tissue paper and old fluffless linen. On no account use silk. If necessary, lens cleaning fluid can be used, but on no account must the surfaces of lenses be rubbed vigorously. A match stick, cut to a point, can be used gently to pick out any dirt lodged in the corners of the finder lenses. Gently rotate the focussing and aperture control collars. If they are sticky or uneven in movement it is better to have them examined and serviced by an expert. Your dealer can advise you as to this.

Now that all loose dirt is removed, you

can run the camera. If it has been left stored with the spring partly wound, the temper of the spring may have been affected. This may result in uneven running, slowing down unduly during running, or the ability to run only a short length of film. You can check some of these by listening carefully to the note of the motor. If it varies in pitch trouble may be present. Once again consult your dealer.

The test should be carried out with a roll of waste film threaded in, but before doing this see that the gate itself is clean and free from incrusted emulsion. The latter can be removed by a slightly moistened match end, or can be scraped off with a copper or brass strip. NEVER use a really hard metal for this purpose, as you may scratch the gate itself, with dire results to future films. If the gate is roughened or scratched by use, it can be repolished, but do not accept the offer of an engineering friend to " buff it up " for you, unless you are confident he understands the requirements of a cine camera. It is quite easy to destroy the requisite flatness and shape of a camera gate in a very few moments with a buffing wheel badly handled.

To check the running speed of the camera mark off exactly 10 feet (or other preferred distance) within the capacity of the motor, marking the film with a pencil line at beginning and end of the distance. Load the film with first pencil line in the gate and then, with a stop watch, check the time it takes to run the film to the second mark. A little simple arithmetic will reveal whether the number of frames per second actually exposed agrees reasonably with the speed control setting.

Some cameras have oil holes. Use a light grade of oil, preferably that sold or recommended by the camera maker, and apply *very sparingly* to the oil holes. Run the camera to absorb the oil, then repeat, two or three times if necessary, the same sequence of operations, rubbing off the excess with an otherwise clean rag. This will work out the old congealed oil and dirt. When you once more put the camera into regular use, watch carefully for excess oil oozing out, and wipe off frequently until it ceases to appear. There is little reason to suspect rusting of the motor and spring, as these will have remained oily during the storage period.

If your camera does speeds of the order of 32 and 64 frames per second, it is unwise to run them at these speeds without a film load in the camera.

Check over all your accessories, looking particularly at the threads around lenses and filters and lens hoods, cleaning thoroughly and very lightly smearing with vaseline. Wipe off all surplus.

The tripod should be cleaned scrupulously. The alloy legs may have corroded slightly, and should be smoothed with superfine steel wool, or superfine emery or glass paper, or, better still, with a buffing stick. If the tilt and pan top are readily taken apart it may be worth while cleaning out the old grease. Regrease lightly with a suitable car grease, such as " Castrolease," or with Vaseline. The legs can also be very lightly smeared with this grease, in preference to Vaseline.

If your tripod has been much used in the past the metal tips may have become blunted. A metal working friend can possibly file them sharp for you, or even remake some new replacement end pieces.

The photo electric exposure meter is rather too delicate for you to do anything beyond cleaning it externally, but you can make a series of test readings to ascertain whether it is still working correctly. If not, your dealer will know of a specialist repair house which is capable of servicing it, but you must be prepared to wait a long time for its return. The number of these specialists repairers of meters is small, and they are all still heavily engaged with service repairs. That is all the more reason why you should get in early.

The only other accessory which merits immediate attention is your supply of camera spools. Check these for parallelism of the cheeks and true running. The former is done with a small metal strip, 16mm. wide, with parallel sides, which should slip down snugly between the cheeks. The latter is tested by placing the spool on a rewind, ensuring that it is held tightly and at right angles to the central spindle, and then revolving it, observing that the cheeks are free from drunkenness and remain in the same place through their revolution.

Having taken the foregoing precautions, you can go out with your camera with reasonable confidence that your cinematography will be trouble free.

CHALLENGE

Challenge to the clubs ! The Wanstead & Woodford C.C. claim to be the " only amateur cine club of any importance to be formed during the war, and the most up and coming in the country ! " It was founded in September, 1943, and to date has a membership of 41 full and 43 associate members (including three in the Forces).

Meetings have been held fortnightly during the winter and monthly during the summer, except for a break during the V.1 period. Brains trust sessions, beginners' half-hours and screenings of members' films and sound films from the American Office of War Information have been popular features of these meetings.

Details of membership may be obtained from the Hon. Sec., S. F. Martin, 134, Malford Grove, Snaresbrook, Essex, and copies of the club's quarterly magazine from the hon. publicity sec., C. J. Middleton, 28, The Glade, Woodford Wells, Essex.

"DO IT YOURSELF!" practical ideas for the handyman

CONCERNING "BLIMPS"

In each issue our contributor supplies worth-while ideas: things to make and things to do. Suggestions for gadgets are welcomed.

By G. A. GAULD, B.Sc.

AS the "Multiplane" series is taking longer to get through than I had anticipated, I am breaking into it this month for a general chat about "Blimps." I have dealt with the subject before but it was a long time ago, and as enquiries about "Blimps" crop up at intervals in my correspondence, a few additional notes may be helpful.

For the uninitiated, a "Blimp" is simply a box-like case in which the projector is housed, constructed for the sole purpose of eliminating the distracting mechanical noise of the machine. The term originated, I think, in Hollywood in the early days of Sound when the studio cameras were housed inside a soundproof case, or sometimes both camera and cameraman performed their duties inside an affair not unlike a portable telephone booth.

The coming of Sound to the amateur drawing room cinema has made "Blimps" almost a necessity and sound projector design has tended to include the "Blimp" as part and parcel of the whole outfit. This is probably because the mechanical noise from the machine can be particularly irritating during quiet speech and the old dodge of employing gramophone musical accompaniment to "drown" the projector is definitely out of date. Readers who have carried out "Conversions" will, no doubt, have solved their problems but I would still urge others of the "Silent" school to use a "Blimp." By so doing, gramophone accompaniment can be of softer tone and a quiet passage chosen for its applicability to the mood of the screen will be just as effective as the noisy ones; the machine itself will be forgotten by the audience and so, the highest level of good showmanship will have been attained.

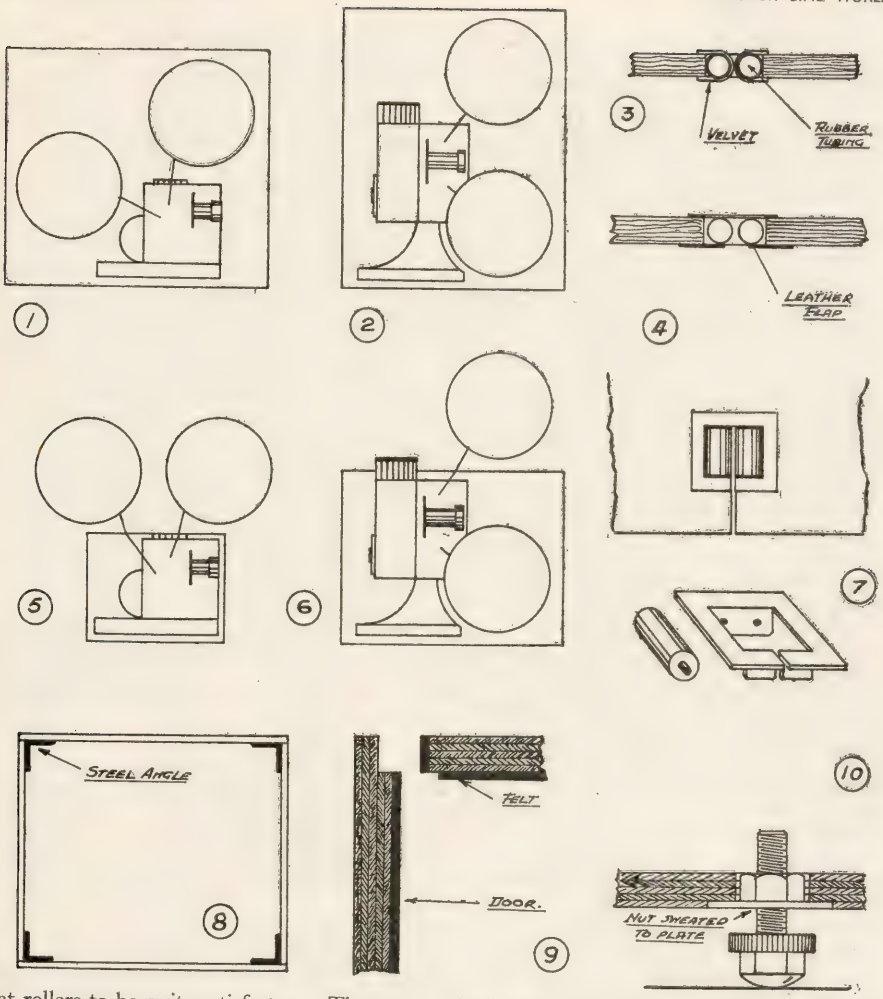
I said above that the "Blimp" is constructed for the sole purpose of eliminating the distracting mechanical noises of the projector. This is, undoubtedly, its primary function, but from the amateur's point of view, the "Blimp" may serve well in another direction. It provides accommodation for auxiliary equipment such as transformers, dimmers, switches, etc., and in consequence, can reduce the whole of the projection paraphernalia to one portable unit which may be set up in the drawing room with the minimum of delay when a show is called for without prior notice. That too, is good showmanship; nothing can be more exasperating to a prospective audience than watching the protracted antics of the projectionist who must trail wires all over the floor and spend an hour in rigging up umpteen separate items of equipment before the show can go on.

So much for the virtues of the "Blimp"; now let us look into practical details.

The first consideration is that of overall size, and decisions will be affected by the type of projector and the amount of auxiliary equipment to be included. There is much to be said for enclosing the film spools as well as the mechanism because a take-up reel running out of truth can produce a most irritating scraping noise. Projectors of the type shown in Fig. 1 lend themselves to this treatment, whereas those of the form shown in Fig. 2 tend to produce a "Blimp" somewhat top heavy and unsteady on its "pins."

If large spools are to be used, then there is no alternative but to have them outside the case and attention to the take-up spindle and the reels themselves will reduce film scrape to a minimum. Here again, the first type of projector produces a very compact "Blimp"—see Fig. 5. A compromise is shown in Fig. 6 for the other type of machine using ordinary reels in which the feed reel only is kept outside the case.

If either one or both the spools are to be outside, then it is clear that provision will have to be made for the passage of the film. Sharp changes of direction should be avoided and if they are slight, the form of opening shown in Fig. 3 will be quite effective. Two velvet pads are cushioned on two short lengths of ordinary gas pipe rubber tubing. If a fairly sharp change in the direction of the film is unavoidable, rollers will have to be provided, and a suitable form of construction is shown in Figs. 4 and 7. Some readers may prefer to use flanged rollers "relieved" in the centre so that contact is made only on the edges of the film. Personally, provided the rollers are free running, I have found



flat rollers to be quite satisfactory. They are mounted as will be seen in Fig. 7, on a frame constructed from sheet brass about 1/16" thick. Washleather flaps are advisable to act both as light and sound "Traps" and it will be noted that the opening is slotted out to the edge of the casing so that the film may be removed at any stage of its run. If either of the two methods illustrated is used, the opening should be equal to about one and a half times the width of the film. This will give it room to "wander" a little and accommodate itself to any irregularities in the spools.

The "Blimp" case itself will necessarily be of box form but as access to both sides of the projector should be provided, it will lack the strength of a box. Rigidity can be obtained by the use of angle stiffeners (from the 6d. stores) as indicated in Fig. 8. "Flush" doors will give full access to the interior of the case from both sides and a method of rebating them to make a good joint when they are closed is shown in Fig. 9. This is a simple matter if 5-ply is used and, indeed, this is a most suitable material for the construction of the whole case—but I cannot tell you where to obtain it at the present time!

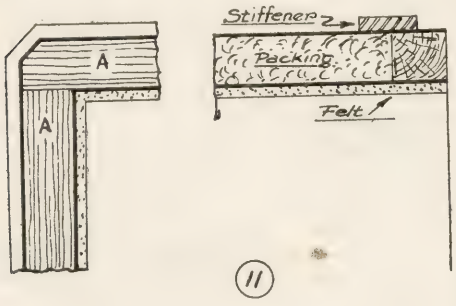
Since plywood of any description is not readily available to the layman, I have shown an alternative method of construction in Figs. 11 and 12. A good deal more work is entailed, but a very satisfactory case will be the result.

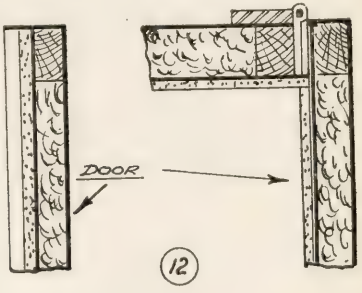
Two frames, preferably in hardwood (A-A, Fig. 11) about one inch square, are

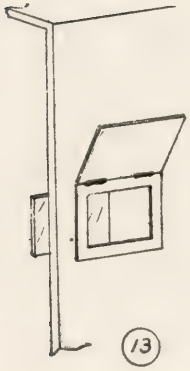
built up to the size of case required. The "sides" of the box are formed about these frames with an internal and external covering of sheet steel about 20 gauge, the frames being located flush with the edges which take the two doors. The space between the two sheets is packed tightly with a deadening material, felt scraps, wool, sawdust, etc., etc., to suppress any tendency to drumming. The sheet metal is secured to the frames by ordinary wood screws countersunk flush. To secure rigidity and at the same time provide a "rebate" for the door and an improved appearance to the case, two external metal bands ("Stiffener," Fig. 11) about 1" x $\frac{3}{16}$" section are fitted completely round the outside. This will call for some careful blacksmith work and the joint in each band should be made about the middle of the bottom of the case, not at a corner.

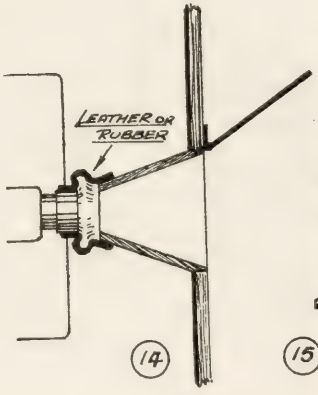
The doors are constructed in a similar manner (see Fig. 12) but each door frame will have to be slightly larger so that the doors will fit the box portion after the manner of a biscuit tin lid. In the sketch, I have shown the outside sheet bent over to form the edge of the "lid." I have done this because it is the proper method of construction, but, unfortunately, it is a very difficult job for an amateur not having the proper tinsmith's equipment. To do it, two lengths of angle iron will be required a couple of inches longer than the side to be flanged over. These are bolted together at the ends after having inserted the sheet with the flange projecting. It will probably be necessary to drill one or two additional holes through the angles (and necessarily, the sheet metal) and insert bolts so that the sheet metal is firmly gripped throughout its whole length. The projecting metal can then be flanged over. The operation should be carried out by pressure, and hammering should be avoided as far as possible. Hammering will splay the metal and cause the sheet to buckle. The two opposite sides of the doors can be flanged in this way. The angles will then have to be shortened to come within the door to complete the other two edges and, since the end bolts cannot be used, G-clamps may be used instead.

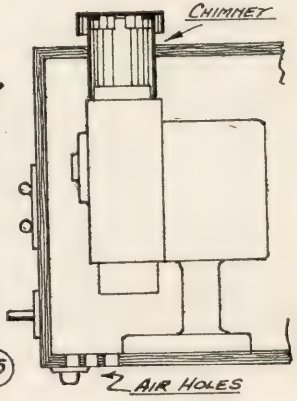
Whichever form is employed, wood, or wood and metal, complete suppression of mechanical noise will be secured by an











internal lining of thick felt glued to the case. Leather cloth provides a serviceable external finish as well as concealing constructional blemishes !

Provision for tilt is best made in the case itself so that the projector may be located in a fixed position inside it. The rear feet should be fixed and the front adjustable, Fig. 10 showing a type employing an ordinary machine bolt and nut. The knurled disc is a useful refinement, cut from $\frac{3}{4}$" thick metal, drilled, tapped, screwed up to the head of the bolt, and sweated securely in position with soft solder. The nut is sweated to a piece of flat plate which is used to fix the whole fitting to the base of the casing.

Provision for the passage of the projector " beam " must, of course, be made. A simple form of window is shown in Fig. 13 fitted with a flap to black out after " The End " has appeared on the screen (another point of good showmanship !). Ordinary window glass is quite unsuitable and glass ground optically flat is both expensive and unobtainable at the present time. An excellent substitute is, however, available in the form of the glass used in making slides for microscopic subjects. This is available from most instrument dealers or manufacturers and they will probably be able to supply suitable glass if the purpose for which it is to be used is explained. The glass should be mounted in slides so that it may be removed for cleaning.

Since the projector will be fixed to the case, and since dust seems to be drawn to a " Blimp " window, in certain designs, it is possible to dispense with the additional glass altogether so avoiding any loss of illumination. This is done by forming an internal hood with a flexible connection as shown in Fig. 14. It is a method which I strongly recommend.

I have left the most important item to the last in the hopes that it will remain firmly fixed in the mind of any reader who contemplates the construction of a " Blimp " ; it is VENTILATION. The fragility of projection lamp filaments has been discussed before in these pages but I would again stress the necessity of maintaining them at the correct operating temperature if full utilisation is to be made of their effective life. In most cases, this implies forced ventilation provided by a fan driven by the projector motor. Now clearly, we cannot have a closed air circuit within the " Blimp " itself ; the contained air would soon attain a relatively high temperature with disastrous results to lamp, film and everything else. Provision therefore *must* be made for the entry of fresh air to the fan and the exit of the hot air from the lamp house *outside the casing.*

Fig. 15 shows a suitable arrangement, inlet holes being provided at the bottom of the casing as near to the fan as possible, while an extension chimney fitted to the top of the lamp house carries the exhaust well clear at the top. Baffles will have to be provided as light traps. The two sets of openings unfortunately seem to allow an amazing amount of projector noise to pass through, so that some experiments with the baffles should be carried out to trap the sound as well. Generally, if the baffles tend to deflect the air and sound towards the *rear* of the machine, such noise as does leak out will be at a minimum in so far as the audience is concerned.

Do not forget that dissipation of heat from the lamphouse by radiation will be restricted by the casing and if a transformer is incorporated, it must be adequately ventilated too. Consequently, it is not at all unlikely that the standard ventilation system of the projector may have to be stepped up by adding an auxiliary fan and motor. Fitting a larger fan to the projector motor will probably overload it. To check up, run the machine in the open in the usual way for a time and test the lamphouse temperature externally with the palm of the hand. Next, run it for a similar period inside the " Blimp " and test again in the same way. If the temperature of the lamphouse casing appears to be appreciably greater inside the case, then find ways and means to improve the ventilation !

" After Only One Bottle . . . . "

(*Continued from page* 257)

always satisfactorily produce the finer gradations. Even more useful, for this reason, would be " before " and " after " instruction on filming in colour. Nor would the value of the films be limited to their actual exhibition, since examination in the hand for the purpose of counting frames, analysing cuts on action, comparing density as it appears on the screen and in the film, would all yield most useful information.

Films of this type are scarcely likely to prove a commercial proposition because probably few amateurs would care to purchase them outright. They would need to have them on hire, but for a considerable period, and the cost of this, at current library rates, would be ridiculously uneconomic. A complete library of text books could be acquired for far less expenditure.

If, then, the films are to be available at all, they must be made by amateurs—a sensible enough solution, since only the amateur can fully appreciate the problems that beset the amateur. Here then is an opportunity for clubs who may be preparing to resume activities to perform a worthwhile service.

A typical Cotswold farm. Fine old 16th century house nestling beside a Norman church. Stone walls in the Cotswolds are made dry without mortar—a point which might well be expressed in a sub-title. Figure of farm worker supplies movement.

The Countryside and the Camera

BY GORDON MALTHOUSE

MANY of us are now in the happy position—long dreamt-of and impatiently awaited—of being able at least to *plan* our first post-war film. And, judging from the *A.C.W.* postbag, many readers have picked on the same subject : the English countryside.

It has always been a popular theme, particularly with amateurs who have graduated from the family film and seek subjects which, while more ambitious, present no great difficulties. After all, everything is there to hand. One can take one's time. There need be no interiors to bother about. Re-takes can usually be managed easily enough. A hard-and-fast script does not appear to be necessary.

These are always potent considerations ; and the appeal of the subject is now greatly enhanced by the nostalgic memories of exiles overseas, the familiarity with it which evacuation and restricted travel have given the stay-at-home, and the importance to which agriculture has attained in the national war economy.

But a woolly romanticism can be just as inimical to the success of the film as the impression that the subject is an extremely easy one. It is liable to give rise to a series of pretty pictures that do not add up to much. Admittedly, they are often effective enough pictorially. You know the kind of thing—it is served up frequently on the professional screen : banks of majestic clouds, over-corrected skies, a ploughing team on the horizon, dancing blossom, dappled shadow on cottage walls. In a professional scenic of this type the commentary will invariably include the word "immemorial" at least once.

The sum total of all this is not the countryman's England, but the town-dweller's idea of it—a very different thing. That idea is the result of knowing very little about the country, and of having an exaggerated reverence for the little one does know.

Very few of the features of the countryside are, in the commentator's well-worn phrase, "as old as time." Even the trees were

planted by *somebody*. That clump of trees on the back of the Downs may well have been planted by the great landscape gardener, Capability Brown.

The face of England as we know it to-day, with its chequer-board of neat fields and hedges, dates only from the early 18th century, when the Enclosure Acts divided the land up into neatly parcelled plots. Only a comparatively small proportion of the farm buildings and cottages is more than a hundred years old. Most of them were built between 1840 and 1880, in the Golden Age of English Farming ; but since practically no building was undertaken after that date, and very little repair work either, they inevitably look quaintly antique against the raw modern bungalow and semi-detached villa.

So that while the movie-maker will, rightly, search out the old and the picturesque : the castles, churches, country houses, earthworks, barrows—for these are the living stones of English history, he will not feature them to the exclusion of everything else, thus suggesting that everything about the country is enshrouded in the mists of time.

The balanced film is selective. It features the beautiful and picturesque, but without an air of hushed awe, and shows them in relation to the more humdrum aspects of country life. It is not a series of highlights which cloy and are basically unreal because they present a distorted picture.

In order to produce such a film, to be able to know what features to select, it is not enough to rely solely on *appreciation* of the countryside. One must *know* something about it—about its history, the types of flora and fauna, architectural characteristics, and so on. The knowledge is easy enough to come by, for during the war there has been an astonishing output of books on country life. Your public library is almost certain to have a good selection.

But, you may argue—and reasonably enough—you have no intention of making a fully documented film on the English scene, town or country planning or the social and economic changes in country life. On the contrary, what you have in mind is a series of pleasant views to remind you of places you have visited and which will afford scope for effective pictorial composition.

Good enough, but as an amateur cinematographer your first aim is to make a *film*. If your series of views can be so selected and grouped that they produce a coherent picture, then you have succeeded in your object. If they do not, you will have produced only an animated snapshot album which may be quite pleasant to look at, but which leaves the audience vaguely dissatisfied, as it will you after a time.

The key to success in this particular field is not so much in the writing of a good script and keeping to it, as in having a general knowledge of the subject, which will enable you to know at a glance what to take and what to reject. Your script can be a tenuous affair—little more than an aid to memory. After all, when you go on holiday you cannot always know in advance the features of the place to be visited, and, naturally, you will want to take shots as opportunity offers, for your film will in part be a personal holiday record as well as a scenic.

Without that knowledge, elementary though it may be, you will be lucky if you achieve anything better than a superficial survey which will present you with bristling difficulties in continuity. The English countryside is so homogeneous, so closely knit and inter-related, that, with a background knowledge of it, continuity will almost suggest itself.

For example, you have taken a few shots of a quiet stretch of river. In the middle distance the branches of a willow tree are cascading gracefully into the water. You have read a little about trees and the uses to which their wood is put. You remember that from oak come railway carriages and old timbered houses ; from ash, carts and car bodies ; from beech, farm implements ; and from willow—the cricket bat.

You could follow these shots with a sub-title : " Portrait of the founder of our greatest summer sport." Follow with a close view of the willow, then cut to a close shot of a cricket bat being swung quickly towards the camera. You can take this shot anywhere and at any time, but the sequence which it begins presented itself to you three days before you filmed the river : a sequence of a cricket match on the village green.

Most people can recognise a willow when they see one, so that there is no need to say what it is in the sub-title, but do not be chary of giving information that is not common knowledge. For instance, you may include one or two exterior shots of a village church in your film. Should it be a good example of Saxon, Norman, Perpendicular, tell the audience so. But do not stuff your sub-titles with information. Keep them short and concise.

It may be that the church is important architecturally because of only one or two features—a thirteenth century broach spire, perhaps, or some early bar tracery windows. Point them out, but do not go into explanatory detail, for you are not making a film on ecclesiastical architecture. Your knowledge of the subject—or the happy chance of

Medium close shots such as this will give vigour and human interest to your film.

picking up a descriptive pamphlet in the church—will have enabled you to select the salient features for presentation. It is enough to have done that.

Your film will, of course, contain very much more than shots of the "show-places" of the district. You will have taken shots of the church, but you will not have neglected the humble cottage, even though it is comparatively modern. You will have taken pains to get some nicely composed shots, but will you have been on your guard against investing it with an easy, hand-tinted picture postcard glamour? It is a picturesque house to look at, but it is primarily a place to live in.

The sun on kidney flint or whitewashed wall is attractive, but look more closely. Look for evidences of disrepair—not, unfortunately, difficult to find nowadays. Part of the fabric may have crumbled, showing, perhaps, a wattle and daub construction. Take a close-up of it. That one shot will reveal how the cottage was built.

And how to reveal the people who live in it? For the countryside—one must bear in mind—is man-made *for* man. The scenery is the background to his work, so now and again show both in the same shot.

The eye grows restless when there is no movement on which it can focus. Even when there are no people to contribute it—and it is not suggested that there should be human interest in every shot—try and arrange that the composition shall include the delicately moving branch of a tree, say, or rippling grasses, or, indeed, anything that stirs gently in the breeze.

Sometimes one can control the movement to suit the tempo of the film. For instance, if your film includes some seascapes following on some stately shots of landscape, you could film the breakers at 32 frames per second. They will then appear to travel much more majestically.

Landscapes that do not contain a single habitation may nevertheless speak eloquently of the history of the countryside to one who has eyes to see. If, for instance, the hedges are straight, and mostly thorn, they were, in all probability, planted after the passing of the Enclosure Acts; if they are irregular, with holly and nut, but little thorn, then they are the older ones, dating from the time of strip cultivation. Knowing this will help you to select your shots not only with an eye to composition but also to assist the unfolding of the theme.

So the countryside, you see, is worth finding out about. A little time spent in reading about it will repay you many times over when you finally screen to an interested audience a film that not only shows the beauty of England but relates that beauty to its history and the life of the people.

Filming in the Far East

BY CAPT. H. BIRRELL

IN 1940 I was posted to a battalion of the Gurkha Rifles in India, and I thought that at long last I would have great opportunities of challenging the makers of "The Drum" and "Lives of a Bengal Lancer." So I got my camera, an Ensign 16mm. turret model, with 1in., 2in., 3in. and 6in. lenses (the last a telephoto) into good order, and bought a second-hand Simplex camera—it has never let me down—and a supply of 16mm. Kodak Super X negative film.

Getting the film was the first mistake I made, for when I came to India the firms available for processing it did not get the sparkling results I was expecting, and thought little of printing in a dirty machine which produced marks on the positive that did not exist in the negative.

After I saw the results I made a resolution to use only Kodacrome and have never regretted the decision one minute. Kodacrome at that time was about 36 rupees a hundred feet (£2 10 0). Although it is difficult, though not impossible, to get it still costs about the same to-day. Projectors were a little cheaper than at home and were quite plentiful, as was all camera equipment in this country until the outbreak of the war with Japan.

After six months, during which time I had exposed about a thousand feet of film, I invested in a second-hand Kodascope "C," which cost £7 10 0, and invited the O.C. round with some of the Gurkha officers to put the film to the acid test.

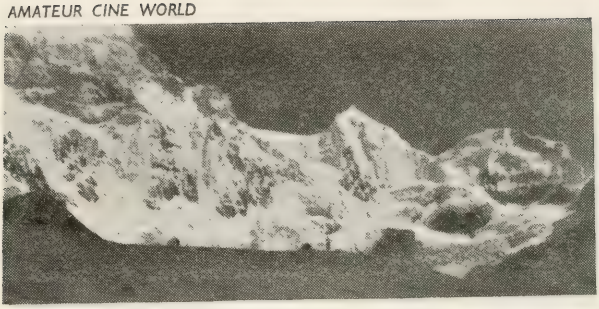
The show was very well received, possibly because, as in a family film, the baby is always the star. The following week a show was arranged for the full battalion—rather an effort for a small second-hand projector with 100 watt lamp to give a show to almost a thousand men. Since then I have been taking films almost all the time.

I went to "The Survey of India" for a short while, and there met the political officer for Tibet, who very kindly invited me up to Sikkim, a small state on the borders of Tibet and North of India. This was a photographer's paradise. I took about a thousand feet of Kodacrome in a fortnight, getting first class results, including a very fine sunrise on Mount Everest.

In spite of the intense light, f/11 was a very safe stop to use. Last year I revisited the place; we climbed up to 18,000 feet, but here the camera started giving trouble and the speed of the motor dropped to about four pictures a second. The remedy was very simple, however: we set the indicator to slow motion, so that the 64 frames per second worked out at about 16. The speed of the Simplex camera remained constant. Of the still cameras, a Brownie was the only one that kept in action at height of over 14,000 feet. Even the shutter of the Contax could not be persuaded to close itself after an exposure.

On another leave I got up to Nepal. Normally Europeans are not allowed into this Gurkha kingdom, but I was lucky once again. My main worry was film, for it was getting scarce in India by this time. However, in a photographer's shop in Katmandu, the capital of Nepal, I was able to get as much slightly date-expired Kodacrome as the purse would allow, and this has carried me on to the present day, so that in the six years of war I have never been short of film.

During the recent Burma campaign I was able to expose about four hundred feet of film—mainly of scenery. At the beginning of the war I thought I would be able to get some real action shots, but when the opportunities came (and I had my camera with me for two of them) the idea of taking pictures was completely forgotten. When the action died down I could have kicked myself for



A scene in the 'photographer's paradise.' Note how the inclusion of the small figure assists in giving an impression of height and grandeur.

not having seized them. A newsreel cameraman who is with forward troops in an actual battle certainly deserves all the praise he gets.

Filming in this part of the world is a complicated business. One has to pay careful attention to :—

1. Censorship (but the Army is really quite reasonable in this respect). Two cameras are allowed in the unit for record purposes. Films, when taken in the field, must be sent to the Chief Field Censor, who has shown me leniency in all cases except one, when I was at fault.

2. Storage. Since coming out East I have taken about six thousand feet of film. The climate of a place like Bengal in the Monsoon is worse than a steam radiator at home, and the films soon get tropical markings on them, while Kodacrome acquires a mossy growth. Luckily, some films in India have cold storage accommodation, and films can be placed with them there with an easy mind.

3. Lens. The lenses soon deteriorate in this climate—first with bloom and then spidering. All lenses must be cleaned once a week during the rains (a five months period), and preferably kept in a cigarette humidor.

4. Lamps and spares for projectors, etc. The Director of Services Cinematography helped me out with a lamp; otherwise by this time my projector would have been unserviceable. Servicing of equipment has to be done by oneself. At home I made it a point never to interfere with camera or projector. Now I take them to bits, clean them up and improvise worn parts. One has to, because rust is only one of the troubles that the climate induces, and if one does not do it oneself, no one else will.

There is a small black market in equipment, and you can get most things if you are willing to pay for them. There is no price control on cameras. In the open market and at reasonable prices you can get nothing, except for an occasional reel. Fortunately, I have several friends in Calcutta who are still camera enthusiasts, and when they go around and try to get their films, they ask if there is any movie film. In this way I get about five hundred feet a year.

9.5mm./16mm. CONVERSIONS

Many readers will remember the conversions of single gauge projectors to dual 9.5mm./16mm. carried out by Cinesmith Products before the war. We are glad to learn that the firm is now permitted by Board of Trade licence to continue the manufacture of parts and accessories, and is resuming its 9.5mm./16mm. dual conversion service with new and improved designs for the 200B, Specto and Kodascope C and D projectors. Replacement parts for any cine apparatus are also made to order. The firm's new address is Ship Buildings, Royston, Yorks.

NEW SOCIETY PROSPERS

Since its inaugural meeting in June, 1945, the cine group of the Sheffield Photographic Society has made considerable progress. The meeting, which was widely publicised by notices in photographic dealers' shops and in the city libraries, attracted an audience of 60. The programme included "Moods of Nature." by Paul Burnford and J. Sherlock's "City of Sidney" (both from the I.A.C. Library) and the following films by members of the Group : "Craig" (the life of a sheepdog) 8mm. colour by J. S. Atkinson, "West Highlands Cruise," 16mm., colour, by J. W. Gillott and "Up in the Morning Early," 8mm., by D. J. D. Wood.

The Group has now joined the Federation of Cinematograph Societies, a procedure which it recommends "to all societies which are now being restarted, for very valuable services are available for a ridiculously small subscription." The syllabus for the winter session is now in preparation. The next public show is likely to be during the annual exhibition of the F.P.S. Particulars of membership may be obtained from D. J. D. Wood, 21, Moorbank Road, Sandygate, Sheffield, 10.

NEW "WELLCOME" EXPOSURE GUIDE FOR CINE WORKERS

For over forty years the "Wellcome" Photographic Exposure Calculator has been a firm favourite with amateur photographers. Their allegiance can now be shared by the amateur cine worker, for the latest edition makes provision for substandard films for the first time. Until 1941 the Calculator was contained in a Handbook and Diary. Paper restrictions have compelled abridgement, the new publication—the "Wellcome" Photographic Exposure Guide—consisting of the calculator and instructions for its use, without the diary pages.

If you have not got, or cannot get, a photo-electric exposure meter, this Guide can be recommended as the next best thing. That it was the first of its type does not necessarily mean a great deal; that it is based on principles which have stood the test of time and is the product of one of the most famous research laboratories in the world, does.

The calculator consists basically of a disc from which one determines required exposures by correlating two factors : the light value for the time of day and weather (obtained from the monthly light tables) and the exposure factor of the film. The resultant reading is then related to the type of subject by a movement of the disc, the figure against the red arrow indicating the correct exposure. In practice it is the work of only half a minute to arrive at it.

This latest issue of the Guide (which costs a shilling and may be obtained from photographic dealers and chemists) has been still further improved by the introduction of light tables for the tropics and conversion tables for intermediate latitudes for the benefit of Forces users. The disc itself has been altered to include factors for the fastest films yet produced, and there are wne illustrations of typical subjects to assist in classification.

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250w. Prefocus, 200v., 210v., 230v., 250v., for Ditmar, Eumig, etc.	37/5
110v. 750w. Bell-Howell (large ring)	68/11
110v. 750w. Prefocus for Keystone, etc.	68/11
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Secretary: **C. LESLIE THOMSON, B.Sc.**

Secretary's Report

DURING recent months it has become evident that the dividing line between sound-film and television is vanishing. In fact, if certain important personages in the film world have their way, the two will be combined into one industry. On the surface the amateur might see little connection between the two "reconstitution" processes—the one is largely the concern of the cinematographer, the other of the radio engineer. But financial considerations are acting very powerfully to compel these two technicians to work in concert. It is an extension of the process which began with talking pictures, when the photographer first joined forces with the "electroneer."

As most readers know, although television is now thoroughly practical, it is still far from being an economic proposition. The expense of producing an entertainment performance is so great that revenue from a license or advertisement-sponsored system can only provide for a few first-class items per week. The remainder of the programme must be composed largely of "current events" and similar inexpensive material, with possibly a sprinkling of sound-films of the interest type. But there is no reason why the more costly entertainment should not be recorded for later use, or for broadcast in another region. In this way the cost per performance can be considerably reduced.

There are two main lines along which television is likely to develop, both of which are being actively planned for at the moment. The first is an extension of the record-and-reissue idea. It is proposed that, instead of relying on intensive rehearsal and complicated switching and scene-shifting during the actual transmission, all entertainment programmes should be "canned" on sound-film, edited and assembled in the usual way. 16mm. is suggested as the most useful material, run probably at 50 frames per second, to provide high-fidelity sound. The sponsors of this system claim that production costs can be drastically reduced, and, in fact, need bear no resemblance to those of a similar production intended for cinema distribution. The film record could be broadcast at any time or place, so making possible a wider, and hence more economic, distribution. The recording and later transmission of sound material has already assumed large proportions in normal broadcasting. What was originally allowed to flourish in the B.B.C. as a war-time security measure has been so very much more convenient for producer and artiste alike that it is unlikely to be discontinued. "Delay in transit" is now quite readily accepted by the majority of listeners.

The other development, which is understandably of more interest to the existing film companies than to broadcasters, is television through cinemas. The entertainment and special event type of programme would not be broadcast for home reception, but would be wired or "privately" radioed to the cinemas. In this way an enormously greater income could be obtained, and accordingly more ambitious and finished productions could be provided. Those who back this system see home television as having only a very restricted scope—probably not very different in general content from pre-war programmes. This second possibility certainly offers less opportunity to the amateur experimenter, and one cannot help feeling that it would be a pity if television were to become so completely commercialised.

Whatever comes of it all, it is certain that the sound-film enthusiast is going to find his horizons widened—whether he likes it or no! Several readers have suggested that when television is recommenced in Britain we ought to include its activities in our discussions. At the present stage it scarcely seems legitimate for T.I.D. to deal with the more technical aspects of television, which are properly the domain of radio and electronic publications. However, once things start moving, development is likely to be swift, and we may have to alter that opinion.

Meantime, why not let us know how you feel about it ?

One of the latest conversion accounts to reach us is from Mr. Walter, who recently completed a very fine 16mm. outfit based on the Bolex G. The soundhead, which is laid out somewhat on the lines of the Amprosound, is fitted with a fluid-flywheel scanner. Mr. Jenkins, of the T.I.D. Board, was kindly given the opportunity to inspect the projector, and reports that it is the most highly-finished conversion which he has yet seen, and that the performance is excellent. Mr. Walter will be remembered by many as the constructor of an earlier conversion, based on the Pathe 200B, and he has once again been good enough to provide us with a short description and several photographs. One of these is reproduced here (Fig. 1), and shows only the actual projector and amplifier. Normally, the outfit sits on an elegant tubular stand, which has tilting adjustment, a very handy drawer for tools and spares, and a platform for non-sync turntable. Those who would like further details are invited to apply for the photographs and description, which will be sent on loan on receipt of 4d. in stamps.

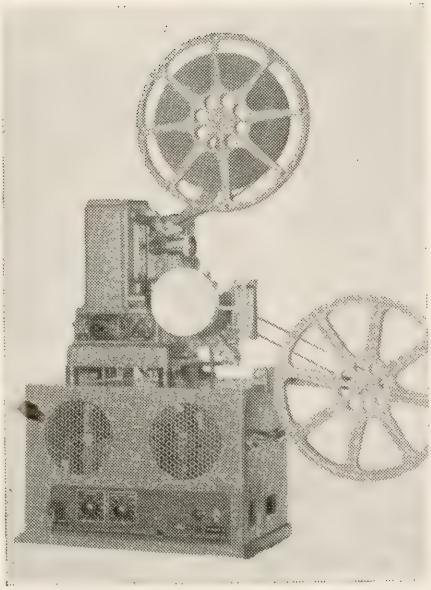

Fig. 1. Mr. Walter's Bolex G Conversion.

Lieut. Downes, who recently joined the T.I.D. Board, has prepared what should prove a most helpful article on the design of high-gain quality amplifiers. The subject is a wide one, and it is quite impossible to deal adequately with even the principal considerations in a single issue. We have, therefore, had to split up the material into two parts. The first of these forms the main item in this T.I.D., and we hope to print the remainder at an early opportunity.

The question of side-pressure picture-gates was raised by a reader in recent correspondence, and it is discussed below in the hope that it may prove interesting, especially to those readers who are anxiously awaiting the chance to buy a new projector, and who want to know some of the points to look for when making a choice. (It may not be so very long now !)

At various times in the past, A.C.W. has contained illustrated reports of readers' " home cinemas." Some of these have been beautifully complete and certainly aroused one's envy. To be able to use a separate room as projection-booth is an ideal arrangement, but very few of us can rise to that luxury. Mainly we have to use apparatus which must be dismantled between shows, and this entails many difficulties, particularly when something more ambitious is desired than "running a hired film through a bought projector." The problems are much more complex than those which confront one when presenting a purely silent cine show.

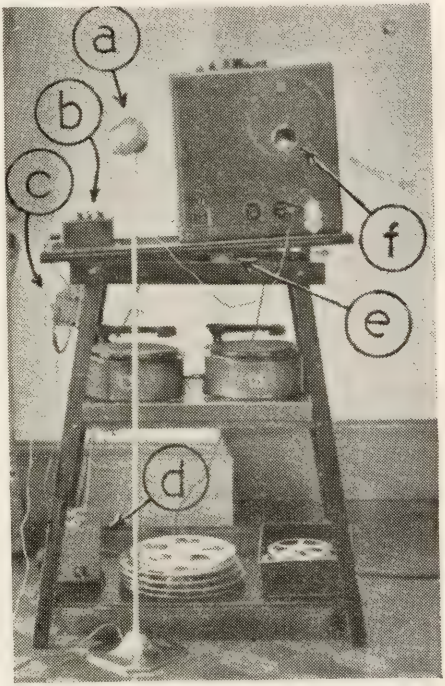

Fig. 2. Projection equipment of complete yet transportable nature.

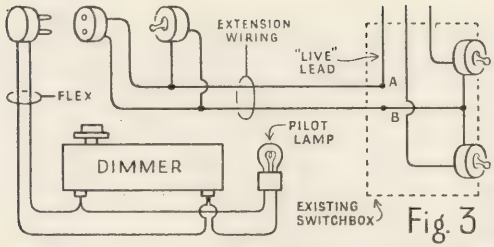

Fig. 3. Wiring of dimmer for room-lights.

There are many ways of arranging the necessary equipment, and we should be glad to have readers send us descriptions—and photographs—of their own original ideas. As encouragement, we give the following account of a fairly typical amateur outfit.

Transportable Projection Equipment

The equipment illustrated in the accompanying photograph (Fig. 2) meets most requirements very satisfactorily, and yet is primarily designed for easy and rapid assembly and dismantling. It is laid out for one-man operation, providing dual non-sync turntables, microphone for commentary, mixer for these inputs, pilot light over the turntables, fader for room lights, and shelf-space for films, records and empty reels. Three cables run from the unit: power supply, room-light control, and loudspeaker connection. The room-light connection is made to a two-pin socket on the wall nearby, and this is shunted by a switch which is closed when the projector is not in use. The wiring diagram is shown in Fig. 3. As the dimmer is lowered, the pilot lamp automatically lights up. (In the diagram, points A and B represent a break in the original wiring of the switchbox of the room.) The mixer consists of three potentiometers, one giving change-over from one pick-up to the other, a second control fades over from gramo to microphone, while the third serves to reduce the gramophone volume to the same level as that of the microphone. The moving-coil microphone was found to give much pleasanter quality than any other type, when used close against the mouth, as is essential when in the same room as the loudspeaker. The step-up transformer is housed in the base of the micro. stand, and the lead from it terminates in a jack-plug, as do the leads from the turntables. The lead from mixing-box to the amplifier is also fitted with a jack-plug, so that when a less complete outfit is required for conveyance away from home, any unit can be plugged direct into the amplifier by itself. At the same time, this form of connector makes possible complete screening of the pick-up and microphone system, without any cumbersome fitments. The two turntables may look rather plutocratic these days, but were bought in those far off days when they cost 39/6 each, complete.

The photograph shows the outfit ready for action, and the letters indicate the following features:—(a) The moving-coil microphone, which is brought in front of the operator for commentary on silent films. (b) The control-box for turntables and microphone has three input jacks on one side, and the interior of the box, including the panel, is lined with copper foil. This screening is connected to the metallic braiding of the cable going to the amplifier input, and is also in contact with the necks of the jacks. (c) The dimmer control has a resistance of 300 ohms, which is satisfactory for a total room wattage of 300 (230 volts). It does not take the lamps down to complete black before switching off, but they become so dim that the actual breaking of contact is not evident to the audience, especially if the projector is switched on during the dimming. When bringing up the lights the making of contact is quite indetectable, since the lamps take a second or two to reach working temperature, and the result is a very smooth transition from dark to the first glimmer. (d) Is the mains transformer for the projector. (e) Is the pilot light, for record-changing, etc., and is a little transformer-fed night-light. (f) A window in the blimp opposite the scanning drum permits a view of the film loops, so that any irregularity can be immediately detected. A black stripe is painted on the scanning-drum, as this makes it much easier to see whether it is revolving at its proper speed. The highly-polished surface can be very deceptive.

The wooden stand can be assembled quite quickly, being held together rigidly by bolts with wing-nuts.

Side-Tension Picture-Gate

Q. *"In the T.I.D. Note 'Effective Presentation,' it is recommended with 16mm. film to apply side-pressure in the picture-gate. I recently bought a Vox on which the previous owner had milled out the side of the gate nearer the operator, and had fitted spring-loaded plates. I thought this an improvement until a friend recently assured me that the idea was no good, and that there ought to be free clearance laterally, to allow for differences in film width. Is there any reason why side-pressure should not be applied to 9.5 film?"*

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A. This question is complicated by several factors. Firstly, it should be understood that the side-tension mentioned in the Note referred to the type of gate in which the film is stopped wholly, or at least to a considerable degree, by the side-pressure, acting in place of the fore-and-aft pressure commonly used in silent projectors. One very important effect of side tension is that it tends to accentuate any transverse curvature of the film. Unless there is some means of counteracting this, side-pressure may cause the film to bulge backwards or forwards in the gate, with disastrous results on the focussing. Even with 16mm. film, where, thanks to more extensive "handling areas," the film can be kept flat more easily, a badly-adjusted side-pressure gate will cause "wander" of the focus. With 9.5, where the free margins are so much narrower, this tendency is even more pronounced. Slight variations in the humidity and age of the stock will result in the screen image seeming to bulge out at the audience and then recede in a most disturbing fashion.

The simplest method of preventing transverse curvature is to make the gate with a curve from top to bottom, usually with the concavity towards the lens. Anyone who has handled a collapsible spring-steel tape will be familiar with the effect. The steel tape is made with a marked transverse curvature, but when the tape is bent this curve disappears entirely. Similarly, in a curved gate, the film can be subjected to quite heavy lateral pressure without any tendency to curl. As the radius of the gate curvature is relatively large, there is no detectible effect on the focus as between top or bottom of the picture and the centre.

If side-tension alone is used to arrest the film in the gate, care must be taken that it is applied evenly along a fair length of film—a couple of inches at least—otherwise the undue intensity of pressure will produce rapid film wear. The film is only about six thousandths of an inch thick, which works out to about 5lbs. per sq. inch for every ounce of applied tension.

Finally, your friend's suggestion that difference of film width should be provided for is correct, but this argument is actually in favour of the side-tension gate. With non-resilient gates, the makers must allow slightly more clearance than the widest film likely to be encountered. In a precision-made projector, this may only be a matter of one or two thousandths of an inch above standard—on cheaper productions it may be very much more. The film which you are showing is probably normally shrunk, and hence several thous. below standard, say about 5 thous. less than gate-width. Since

only fore-and-aft pressure is applied, the film is free to move laterally within this clearance. If the screen picture is 5 feet wide, the linear magnification is in the region of X200, and 200 times 5 thous is one inch. In other words, the picture is likely to move an inch to one side or the other, as variations in the stock alter the shape of the film loop.

With side-tension, one edge of the film is always in contact with a fixed guide, and if this corresponds with the "guided edge" observed in printing processes the screen image will be as steady as possible. In sound film this guided edge is on the track side of the film, so that with 9.5, where the track is nearer the operator, the spring-loaded plates ought to have been on the inner side, with the fixed guide next to the operator.

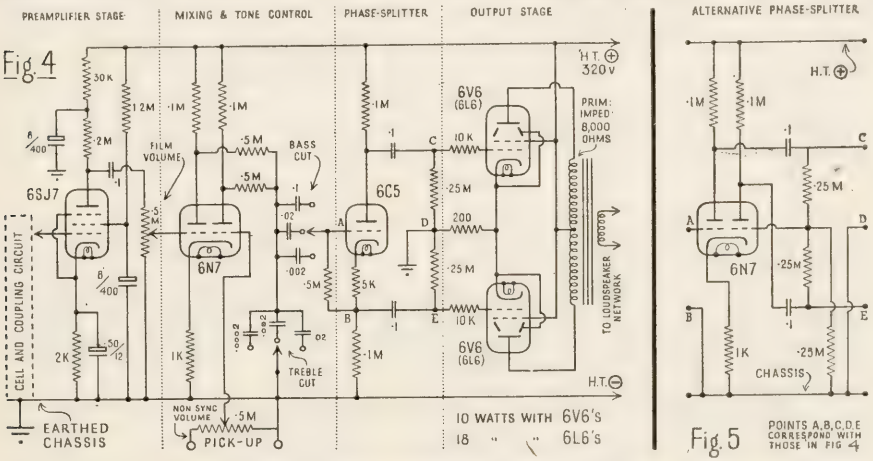
In a flat gate, a very mild degree of side-tension might be applied solely to prevent lateral wander, but unless effective means for preventing curl can be provided, side-tension as a substitute for fore-and-aft pressure is likely to cause trouble. Although we may disagree as to the reasons, your friend's estimate of the alteration is probably correct.

Notes on High-Gain Amplifiers

As a basis for this discussion we shall take the circuit shown in Fig. 4 as a typical quality amplifier for sound-on-film reproduction. It provides the essential requirements of a high-gain pre-amplifier stage, tone-control, mixing for film and gramo inputs, and a phase-splitting stage for feeding the push-pull output stage, which is capable of giving an output of 10-12 watts. (In this diagram, and those which follow, the conventional contractions are used. All capacities are in microfarads, and where two figures are given the lower indicates working voltage. The positive pole, in the case of electrolytic condensers, is indicated by a hollow plate. Resistance is in ohms, the letter K denoting thousands, and M millions —or Megohms.) Those who have the December, 1942, issue of *A.C.W.* on hand may be interested to compare the circuits given there with the present one.

Taking the amplifier section by section, we shall consider first the pre-amplifier. The actual cell circuit was fully discussed in the June, 1944, issue, so we shall not deal further with it here, except to point out the need for careful screening between the cell bias (polarising voltage) supply and the rest of the amplifier. The valve used in the pre-amplifier may be either a pentode or a triode. Suitable pentode types are 6J7, 6SJ7 (both Octal), 6C6 (UX), SP4 (British, 4 volt), etc., and the following are suitable values for the associated components :—Anode Load Resistor, 0.1 to 0.25 megohms. Cathode Bias Resistor, 1,000 to 2,000 ohms. Grid Resistor, 2 megohms maximum. Grid Resistor of *following* valve, about 4 times Anode Load. Screen Resistor, 4 to 5 times Anode Load (see paragraph below). Screen Condenser, 0.5 mfd. minimum. Bias Condenser, 25mfd. or more. Anode Decoupling Resistor, one-third of Anode Load. Anode Decoupling Condenser, 2 mfd. or more. High-Tension Supply, 200 to 350 volts.

To keep circuit noise to a minimum do not allow the anode current of the first valve to exceed 1 milli-amp, screen and bias voltages being altered suitably if necessary. Keep the grid bias reasonably high, to avoid overloading the grid circuit. All resistors should be conservatively-rated carbon type. Con-



Figs. 4 & 5. Circuit diagram of high-gain quality amplifier. Sections discussed in text.

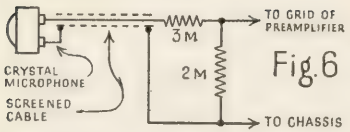


Fig. 6

Fig. 6. Input matching circuit for crystal microphone.

densers should preferably be mica, or first-grade paper. Bias electrolytics should be rated at least 100% above actual working voltage.

If a second stage of high-gain is used the actual voltage *at the anode* should be high—180 to 220 volts. This stage need not be extensively decoupled. Total first and second stage harmonic distortion will be negligible—below 2%. A rising top-note characteristic can be obtained by the use of a high-inductance choke, instead of an anode load resistor.

Triode valves are not recommended for high-gain stages for the following reasons :—Loss of higher frequences (Miller Effect) Low gain ($\frac{1}{10}$th that of pentodes). Low input impedance (difficult to match correctly with photocell, crystal pick-up or microphone). Circuit values very critical. Against these factors, there are the advantages of simplicity and stability as compared with pentodes, and also of low circuit noise and hum. This last, however, is of relatively little benefit, due to the much lower gain per stage. Triodes are ideal, however, for phase-splitting and low-gain mixing. If it is desired to use a triode in a high-gain circuit, the following conditions should be observed :—Cathode Resistor 700 to 1000 ohms (optimum value very critical). Load Resistor should not be less than 2 to 3 times the valve plate resistance, and not more than $\frac{1}{4}$ of that of the following valve grid resistor. This last should be kept as high as permissible—usually 1 to 2 megohms. Harmonic distortion may be reduced by cutting down the grid bias (but this in turn reduces the signal voltage which may be applied to the valve). To minimise high-note losses, either (a) use a pentode in the following stage, thus reducing interelectrode capacity (Miller) effects, or (b) lower the gain of the stage, by using a smaller anode load. Mainly on account of critical circuit values, a negative feed-back is not recommended where triodes are used as voltage amplifiers.

Input Matching. (a) Photoelectric Cell : See June, 1944, *A.C.W.*, as noted above. (b) Non-sync Gramo. : A crystal pick-up is recommended, combining robustness, low noise level, and a rising bass response which partially compensates for recording losses. The most suitable value of load resistance (i.e., volume control) is 0.5 megohm. A lower value tends to give excessive top, while higher may give exaggerated bass. (c) Microphone : Diaphragm-type Crystal is recommended. It has a low noise level, is robust, "hiss" free, gives excellent speech quality, and the input circuit is simple. A 5 megohm load is correct, but, since 2 megohms is the maximum allowable in the grid circuit of the usual pentode, the load may be split, as shown in Fig. 6. This introduces an 8 dB loss in volume, but ensures correct bass response.

Phase-Splitting. To feed the signal into the push-pull output stage it is necessary to divide it into two opposing voltages. A centre-tapped transformer may be used for this, but is not recommended for the present purpose on the following counts :—Cost (high for a first-class instrument). Bulk and weight. Inherent harmonic and frequency distortion. The alternative is to use electronic phase-splitting as shown. This circuit possesses the following characteristics : Linear frequency response from 15 to 18,000 cycles. Total distortion less than $\frac{1}{2}$%, thanks to considerable negative feed-back. Stage-gain of each half (again due to feed-back) 0.9 times (i.e., overall gain of 1.8 times). Will handle large voltage outputs—some 45v. peak. Prone to pick up hum, due to high input impedance. Hum

CIRCUIT	OUTPUT WATTS	TOTAL DISTORTION	EFFICIENCY	REMARKS
ONE 6V6 WITH NEG: VOLTAGE FEED-BACK	4·5	3%	28%	FOR HOME USE
ONE PX4 DITTO	3·5	UNDER 2%	19%	BETTER QUALITY FOR HOME USE
TWO PX25 CLASS A PUSH-PULL	12	NEGLIGIBLE	20%	HIGHEST QUALITY FOR NON-SYNC ETC.
TWO 6V6 CLASS AB1 PUSH-PULL NEG: F-B	10-12	UNDER 3%	35%	EXCELLENT FOR NORMAL USE
TWO 6L6 DITTO	20-32	4-5%	50%	FOR USE IN SMALL 35MM CINEMA

Fig. 7 VALVE AND AMPLIFIER DATA

CONE DIAMETER	POWER CAPACITY	SUBSTANTIALLY LEVEL FREQUENCY RANGE
5"	1·5 WATTS	400-10,000 C/S
8"	2·75 "	150-7,000 C/S
10"	3·25 "	80-6,000 C/S
12"	4·5-6 "	30-4,000 C/S
5" TWEETER 12" WOOFER	7-12 "	25-10,000 C/S

Fig. 8 LOUDSPEAKER DATA

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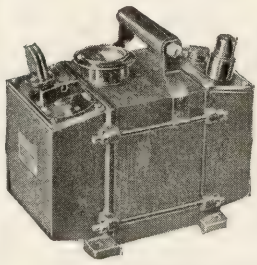

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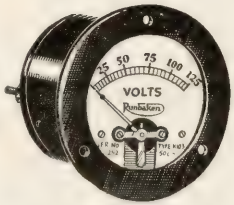

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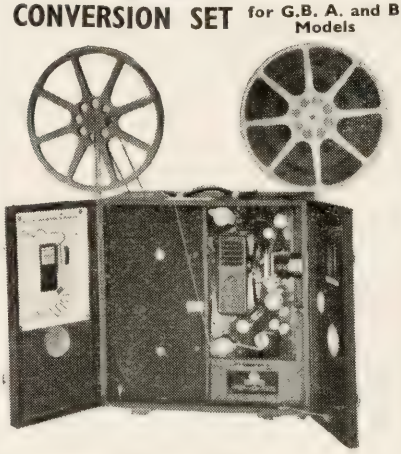

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may be minimised by making the cathode negative with respect to the heater. A separate heater winding for this valve may be centre-tapped and connected to a point approximately 100v. positive with respect to the chassis. In practice, however, it is usually found that so long as the phase-splitter is not followed by a high-gain stage, hum is quite negligible. Grid and cathode wiring should be well screened. Double-valve phase-splitters (e.g., type 6N7) will provide gain of up to 20 times, and are not normally so sensitive to hum. They are, however, liable to introduce out-of-balance harmonic distortion, and provide a limited output voltage—about 20 peak. One half of the valve obtains its signal either from (a) a tapping on the anode load of the other—input—half, or (b) a tapping on the grid resistor of one of the following push-pull valves. The latter system is recommended as being simpler and more stable. The circuit shown in Fig. 5 is known as "floating paraphase," and is particularly efficient, being self-balancing. This may be substituted for the phase-splitting stage as shown in the basic circuit.

(If extra gain is found necessary, the bias resistors of either or both the 6N7 valves may each be shunted by a 25 mfd 25v. condenser.)

Power Output Stage. For this a "Class A" or "AB1" push-pull circuit is recommended, preferably using beam-tetrodes, with negative feed-back. ("AB1" indicates that the grids are over-biassed, although not to the extent of the once-popular "quiescent push-pull.") Such a circuit provides :—Level frequency response with low harmonic distortion and good stability. Reasonable loudspeaker damping factor (i.e., effect of loudspeaker resonance is reduced). Excellent economy (a good proportion of the H.T. power supplied to the amplifier is returned as audible signal). If outputs below 5 watts are desired, and the highest quality is not essential, a single large triode or beam tetrode with negative feed back is quite satisfactory. 3 watts is ample for domestic use, while 8 to 12 watts, using normal diaphragm-type loudspeakers, will comfortably fill a hall seating 150 to 200 people.

Harmonic distortion should be kept below 4% total, and a level frequency response from 25 to 10,000 cycles is desirable. The table in Fig. 7 gives the more important characteristics of some typical valves. Output valves should never be over-run with the object of economy, and the manufacturers' published figures *should be adhered to.* Class AB2 or B circuits (in which the grid is driven positive) are not recommended, except where the absolute maximum of output from a given H.T. supply is essential—e.g.,

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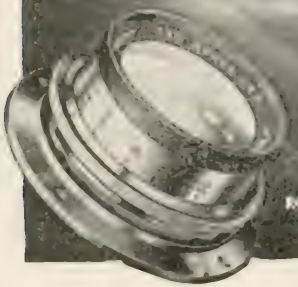

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in mobile work—since the poor resultant quality largely counterbalances the very high efficiency (up to 70%).

Cathode biassing is recommended for Class A and AB1 power valves, as it permits a higher value of grid resistor to be used safely, and hence allows a higher gain to be realised in preceding stages. Where matched pairs of output valves are used, and individual control of grid bias is therefore unnecessary, a common bias circuit provides a slight degree of automatic balancing, and hence a slight reduction in harmonic distortion.

Any slight tendency to instability at low frequencies may be cured by the insertion of grid and/or anode "stoppers" of 10/20,000 ohms, and 100 to 150 ohms, respectively.

Output Transformer. Care is essential in the choice and matching of the output transformer, otherwise loss of power and increased distortion will result. The correct ratio is given by the formula :—

$$\frac{T1}{T2} = \sqrt{\frac{\text{Load resistance}}{\text{Speech-coil impedance}}}$$

E.g., for 8,000 ohms load, and a 5 ohm speech-coil, the required ratio would be :—

$$\sqrt{\frac{8{,}000}{5}} = 40{:}1$$

Do not be misled into using one of the small so-called "multi-ratio" transformers, which are really not intended for handling more than 2-3 watts (and that rather inefficiently!). To handle 12 to 15 watts, the transformer should have a core of at least 1¼ sq. ins. cross-section, and be wound with wire not finer than gauge 36 in the primary. With this gauge, the resistance (D.C.) of the primary winding should be found to be about 400 ohms, indicating a high inductance. The actual disposition of the windings is also important, but in this matter the average worker can only rely on the reputation of the manufacturer.

The loudspeaker system should be of the dual ("tweeter-woofer") type, as described fully in *A.C.W.* for March, 1945, and here again it is important not to be misled by makers' optimistic claims of power-handling ability. The table in Fig. 8 indicates the capabilities of normal types of open-cone (unloaded) moving-coil speakers. These figures represent maxima, and with some cheap speakers even the loading shown will produce overload, with harmonic and frequency distortion.

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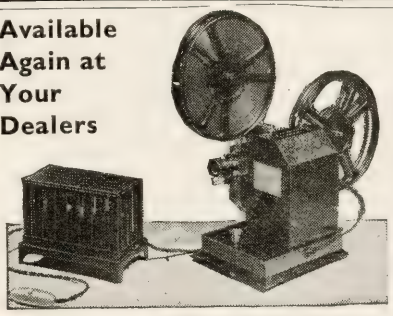

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Further particulars on back of order forms (supplied on request).

Illustrated literature of 8mm., 9.5mm. or 16mm. film libraries 1/-, post free. State make, model, and (if possible) serial number of projector. (9.5mm. programmes may be booked from either 1st, 2nd or 3rd editions of the 9.5mm film catalogue. 16mm. programmes should be booked from 1945 (2nd edition) catalogue only. Previous editions cancelled.

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THIS new folding rewind, which weighs only 5¾ lbs., is nevertheless a sturdy, heavy duty apparatus capable of standing up to as much work and wear as any of the more orthodox types of rewinder. When folded it measures 15″ long, by 6″ wide by 11½″ high.

It will be seen from this that the two spindle arms are 13″ long, and the distance between centres of the spindles is 15½″, thus accommodating all sizes of projection spool, up to and including 1,200 ft. 16mm.

The spindles are so shaped that they will take either 16mm., 9.5mm. or 8mm. spools, the former being held on to the squared end of the shank by the usual spring-loaded ball catch, the latter by a turn-over tap at the outer end of the spindle, the portion of which in front of the squared section is machined down to the smaller diameter necessary to enter the centre of the 9.5mm. spool.

The rewinder is of the type known as 'single-ended,' having a 3½ to 1 ratio crank winder on the right hand end, and free spindle on the left hand end. The rotation of this is controlled by a spring friction device, which is readily adjustable for tension after removing a screw-on cap which not only obviates unintentional alteration of the tension, but also protects the user's clothes from soiling by oil. There are three oiling holes, one on the free spindle and two on the cranked spindle and housing.

The base is of heavy gauge steel plate, pressed into an inverted tray form with formed feet, and black enamelled. The arms are carried in heavy brass shoes bolted to this plate. The shoes are of channel section, the sides being radially shaped with a notch at the top of the radius on each side, and the arms pivot on heavy spindles which span the shoes from side to side.

The arms themselves are of solid metal, probably brass, of about ⅝″ diameter in section. At their lower ends are strong gunmetal finished spindles which pass laterally through the main arms and rest at each end on the sides of the shoes above referred to. These spindles are spring loaded so that they bear down on the radiused sides and, when the arms are in operating position, drop down into the notches holding the arms rigidly in their respective positions. The shoes and arms are all heavily plated.

This is an excellent piece of apparatus, thoughtfully designed and well made. Our only criticism is that the steel base acts as a sounding board and makes the rewinder rather noisy to operate. We would suggest that some means be found of damping this base, either by the well known method of pasting felt on to it, or by felt spraying, or some other suitable method.

The Duowind costs £6 12s. 6d. and is available from dealers or direct from the makers.

FEDERATION FILM SHOW IN MANCHESTER

A film show of particular interest to amateurs has been arranged by the Northern Branch of the Federation of Cinematograph Societies. It is to be held in the Hall of the Manchester Geographical Society, 16, St. Mary's Parsonage (near Deansgate), Manchester, on Saturday, October 6th, at 3 p.m., and an excellent programme of 16mm. films has been arranged.

Among those already promised are " The Swallow-Tail Butterfly " and " In Our Garden," both colour films, by J. H. D. Ridley, A.R.P.S., and " An Apple a Day," colour, by F. M. Marshall. Projection will be by members of the Hyde C.S., with musical accompaniment by members of Salford C.S.

An open invitation is extended to all amateurs, whether members of the Federation or not ; and it is proposed to have a very brief discussion during the afternoon regarding the proposed formation of a Manchester Amateur Film Club.

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★ Points from Letters ★

CABINET PROJECTION

Sir,—It would be of interest to know if other readers of *Amateur Cine World* would, like myself, prefer to have a projector designed for, and built into, a cabinet in which is incorporated a viewing screen somewhat in the nature of a television set.

The present combination of a rather naked and unsightly-looking projector with its separate screen is reminiscent of the original awkward-looking wireless sets with their separate batteries and speaker. Besides, the apparatus is not instantly available for use without preparation.

After some experimenting I have designed and built a cabinet containing my 9.5mm. projector and incorporating a transparent screen 9in. x 7in., upon which the picture is thrown by a mirror arrangement. The screen is of flashed opal glass which gives a very satisfactory result, and the whole apparatus is entirely enclosed and ready for use at a moment's notice.

The width of my cabinet is 1ft. 9in. and the height 1ft. 1in. By an integral design of cabinet and projector, coupled with a shorter focus lens, a much larger picture could be obtained without increasing the size of the cabinet.

Leconfield, Yorks. Wm. Roddick (F/O).

(The idea has certain advantages, but the drawbacks are considerable. Chief of these are the small size of screen (there would be a loss of brightness, though admittedly not a serious loss, if a larger screen was used, due to projecting through it) and the impossibility of keeping an eye on both mechanism and screen during projection. Then again, by adopting the idea one would surrender one of the principal merits of the substandard projector: its mobility. The scheme suggested would not, of course, be practical for sound film projection.—Editor.)

A LIBRARY OF AMATEUR FILMS

Sir,—I was particularly interested in the Editorial "Public Performance," in your March—May issue. I have felt for a long time that the best amateur films should be made available through a library. How often do we have an amateur film held up as a model of perfection in a particular field, only to discover that its only public performance was at the "Ten Best" Show of 1935?

I visualise a library which is a branch of one of the official organisations. An annual subscription of five or ten shillings would assuredly cover expenses, and a hire fee comparable to the average library fee would probably provide ample working capital. I should think it unlikely that an amateur would require payment for the copying of his work, and I take it that such an organisation would be non-profit-making—that is, all proceeds would be used to meet actual expenses. Ultimately, of course, all films would be copied in 8mm., 9.5mm. and 16mm. —including examples of "how not to do it," for which I will gladly submit my own for consideration.

In conclusion, may I offer my sympathy to Sgn. Harding of the B.L.A., who is unable to obtain Pathe chargers in their own home. This is a "16mm. country" and consequently I can obtain film only through the most devious channels. I am gradually accumulating a stock of empty Pathe chargers for which there is no market here. Customs regulations forbid my sending them out of the country, but they are too valuable to throw away. If Sgn. Harding can think of any lawful way of getting these chargers, he is welcome to them. I am growing a little tired of carrying them around with me. . . .

C.H.Q., C. R. Livingstone (Sgt.).
East Africa Command.

MOUTH-WATERING NEWS

Sir,—While on leave in Venice recently I saw in a shop window a carton of Double-8 Ferrania panchromatic film (25ft.). Ferrania is Italy's leading film manufacturer. I have used their roll film, which compares favourably with Kodak and Selo, so I dashed into the shop—my Keystone having lain in its case for so long—and bought six reels.

Having purchased some Kodachrome in Florence (it cost me £2 10s. and had already been exposed, though I was not to find this out until after Kodak had processed it!) I was agreeably surprised to find that the price was 350 lire (17s. 6d.). When you consider that 120 roll film costs 200 lire (10s.), you will appreciate that this was quite reasonable.

16mm. stock seems to be available in unlimited quantities, and as Ferrania have the machines, it could surely be readily perforated for 8mm. use. Exported to Britain it would help pay a very small part of Italy's debt and give great pleasure to many who are denied the opportunity of filming because of stock not being obtainable.

R.A.A.F., A. S. Fellows (L.A.C.).
C.M.F.

(We hope this catches the eye of the Board of Trade, but are not sanguine of any development, that would directly benefit the amateur over here. Film stock and laboratories have in some cases been taken over, by arrangement, in the liberated countries the output being used for the production of prints of entertainment films for British and American troops. And surely a better use could not easily be found. With the termination of hostilities, however, the position should ease, and we may look forward to a more generous ration.—Editor).

16mm. SIEMENS MODEL D CINE CAMERA

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Please state whether Reversal or Neg.-Pos.

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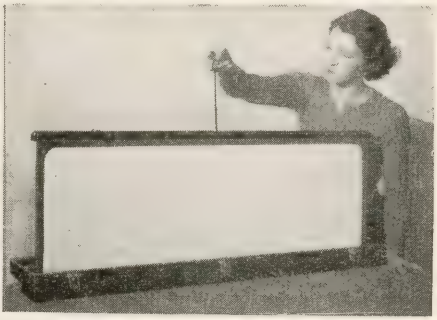

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SMALL ADVERTISEMENTS

(*Continued from page* 288)

FOR SALE

The New Victor 16 Talkie. Brief specification: 750w. x 1,600ft., 30 watt, built in amplifier, 12" speaker unit, automatic anti-film damage stop—audience up to 1,500. Orders now being booked. Send in your name. Send also for sales lists of films and accessories, and film loan lists. (6d. will cover.) Talkie and silent projectors of first quality always in stock. Machines in stock at time of making out this list include Bell & Howell, B.I.F., Gaumont British and S.P., and Vox talkies. Bell & Howell, Bolex, Kodak, Keystone, Siemens, Pathe and New Triplico machines. Service Department handles all repairs, but cannot take full measure of repairs yet owing to volume of work on hand. A few excerpts from general list includes: Gaumont British Talkie amplifier and Magnovox 66 speaker from £250 Model "D" £68 10s.; G.B. spare amplifier from Model, "A" £35; De Vry combination amplifier and speaker £30; Farnell amplifier with P.E.C. lead £25; Sectional fireproof 35mm. projection box £8 17s. 6d.; 16mm. folding rewinders on oak bases (to special order) £6 18s. 6d.; 16mm. Service splicer £6 6s. Royal Sutcliffe Cine Equipments, Bradford. 'Phone: 8547. 'Grams: "Cinequip, Bradford."
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(*Continued on page* 286)

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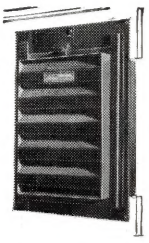

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